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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/856,845	10/29/2001	Akira Saito	0649-0777P	4751

2292 7590 04/18/2003
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EXAMINER
WYROZEBSKI LEE, KATARZYNA I

ART UNIT PAPER NUMBER

1714

DATE MAILED: 04/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/856,845

Applicant(s)

SAITO ET AL.

Examiner

Katarzyna Wyrozebski Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 16-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-23 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1

- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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Election/Restrictions

1. Claims 16-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group II, there being no allowable generic or linking claim.

Election was made **without** traverse in Paper No. 10.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-330959 ('959) in view of JP 07292161 ('161).

Prior art '959 discloses composition for tire treads having improved wet skid nature, rolling resistance and abrasion resistance.

In '959 SBR rubber is polymerized with Lithium containing initiator, which indicates living polymerization. The SBR is coupled with glycidyl diamine compound in an amount that is greater than 60% [008]. Utilizing the above amount of glycidyl diamine compound, results in coupling rubber chains, and thereby controlling its molecular weight distribution to a specific range. The range renders the rubber processable and raises interaction of rubber with silica and reduces electrical insulation of silica when utilized in conjunction with carbon black [0017]. Resulting rubber has weight average molecular weight of 500,000 or more and ratio of Mw/Mn of 2.2-3.2. The above values have been determined by GPC [0019].

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Additional components of '959 include silica in amount of 10-80 wt %; carbon black in amount greater than 25 wt% [0008]; where combination of carbon black and silica can not exceed 100 wt% [0013] or else processability and rolling resistance will fall.

Further additives include vulcanizing agent, vulcanization accelerator, plasticizers, silane coupling agent in an amount of 0.5-10 wt % by weight of silica. Examples disclose use of Si-69 coupling agent in amount of 1.2-6.4 in Table 2 [0023].

Table 2 further discloses that in addition to modified SBR rubber, usually in an amount of 75 wt %, prior art '959 utilizes butadiene rubber in an amount of 25 wt %.

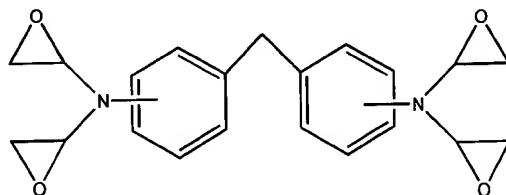
The difference between the present invention and the disclosure of the prior art of '959 is presence of oil extenders with its amounts, amounts of vulcanizing agent and vulcanization accelerator as well we lower amounts of carbon black, kneading temperature of 135-180°C and lower Mw/Mn ratios (2.2 or less).

The prior art '161 discloses composition for tire treads having good skid resistance comprising modified rubber, silica and carbon black reinforcing filler, coupling agents, oil extender, vulcanizing agents and accelerators and other conventional additives for tires.

In the example disclosed in '161 [0044] styrene and butadiene are polymerized utilizing n-butyl lithium initiator, wherein according to the specification, the lithium end is active (p. 4 [0023]). Active end signifies that living type solution polymerization. After SBR is polymerized tetraglycidyl ether-1,3-diphenyl aminoethyl cyclohexane compound has been added. Upon addition of glycidyl group, living polymerization will terminate.

Specification further provides support for tetraglycidyl ether meta-xylene diamine and tetraglycidyl ether diamino diphenyl methane. The last compound has formula:

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The above described compound is similar to that of '959 as it contains amine with two glycidyl units.

Modified SBR rubber of the prior art '161 has Mw/Mn in a range of 1.05-4.0 [0027] with weight average according to example [0046] of 497,000. The rubber of the prior art '161 is extended with oil, wherein the amount of the extender oil is in a range of 20-100 wt % [0039]. The amount of the extender oil depends on the amount of reinforcing agents so that elastic modulus of the tread compound after it is vulcanized can be adjusted accordingly. If the amount of the extender oil is less than 20 wt%, elastic modulus becomes too high and driving stability decreases.

Silica utilized in the amount of 10-100 wt % can be also used in conjunction with carbon black in an amount of 10-100 wt % [0012] and their total amount should be in a range of 20-100 wt %.

Vulcanizing agent is typically sulfur and accelerators include sulfenamide, guanidine and thiouram [0040] in the amount of up to 10 wt % by the weight of rubber.

Rubber composition of the prior art is kneaded at a temperature of 170°C to mix all components excluding vulcanizing system. The composition was vulcanized at a temperature of 160°C [0051]. With respect to the last claim 15, regarding the heat loss and discharging

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temperature, it is examiner's position, that if the prior art '161 indicated that the temperature is maintained at 170°C, then the loss in heat that may occur will be negligible, since the temperature is maintained.

All the components of the tire composition have to be properly balanced in order not to impair the important properties of the tire tread. Amount of the extender oil has to be adjusted so that the modulus of the tire tread is proper. The amount of the vulcanizing agent and accelerators has to be adequate to properly conduct vulcanization of the rubber. Amount of the reinforcing agents also has to be in a range that would not impair processability and rolling resistance. The Mw/Mn has to be appropriate not to impair processability as well.

In the light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize the combination of the prior art '959 and '161 and thereby arrive at the present invention. The prior art '959 discloses modified BDR with required properties, while '161 provides other otherwise conventional additives in the tire composition, with good reasons why these additives should be used in given amounts in order to provide for efficient tire tread.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,482,884 to Schall is applicable to present claims as 103 rejection (does not contain Mw and Mn limitations). Since the applicant has not submitted certified translation, the prior art can be utilized in the future rejections. JP 07330959 discloses use of carbon black

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instead of silica. US 4,914,248 to Kitagawa, does not teach silica. US 5,134,199 to Hattori utilizes carbon black.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


KIWL
April 16, 2003